

*United  
States  
Steel  
Corporation*

CENTRAL STEEL DIVISION

GARY WORKS  
1 NORTH BROADWAY  
GARY, INDIANA 46402

May 4, 1979

Earl A. Bohner, Director  
Water Pollution Control Division  
Indiana State Board of Health  
1330 West Michigan Street  
Indianapolis, Indiana 46206

RE: Renewal of NPDES Permit No: IN 0000281  
United States Steel Corporation  
Gary Works

Dear Mr. Bohner:

This is to request a renewal of the subject NPDES discharge permit as required by SPC 15, Section 22, and the terms of our present permit. Included herewith are application on Standard Form C for all outfalls, and four attachments. Attachment 1 is the Consent Decree in the consolidated cases of United States of America v. United States Steel Corporation, Hammond Civil H 77-212, and Stream Pollution Control Board for the State of Indiana v. United States Steel Corporation, Hammond Civil 73 H 190, entered in the United States District Court for the Northern District of Indiana, Hammond Division, on September 27, 1977. Attachment 2 is a stipulation entered in the consolidated cases of Metro-politan Sanitary District of Greater Chicago v. United States Steel Corporation, No. 70 CH 964, and People of the State of Illinois, ex rel. William J. Scott v. United States Steel Corporation, No. 72 CH 258, entered on August 10, 1977, in the Circuit Court of Cooke County. This Attachment 2 is included for your information and to fulfill the requirements of Section 3 of Standard Form C, including certain agreements with respect to water pollution control at Gary Works, which agreements, however, are subject to all the terms and conditions of said stipulation and are not severable.

The data contained in the enclosed stipulation and included in Standard Form C with respect to discharges are monitored under the terms and conditions of the Attachment I.

We wish to renew our request for modified limits for zinc and chrome at Outfall 034 (ST-17), as set forth in our letter of December 20, 1977, to Mr. Joseph H. Snyder, Section Chief, Compliance Section, Indiana Stream Pollution Control Board (Attachment 3). That letter requested a modification to the zinc limit. The same rationale applies to chrome as well, and we request that the limitations for zinc and chrome for Outfall 034 be changed to 1.0 mg/l, 30 day average, and 2.0 mg/l daily average.

06631



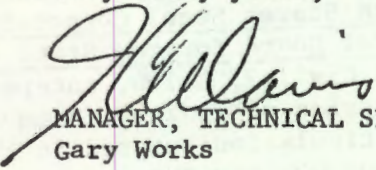
We further renew our request for alternate thermal limitations pursuant to Section 316 (a) of the Federal Water Pollution Control Act. These limits were requested and justified in our submission of January 6, 1978, to Oral Hert, Technical Secretary, State of Indiana, Stream Pollution Control Board, and to Mr. B. J. Constantelos, Chief, Compliance and Engineering Section, U. S. Environmental Protection Agency, Region V. Attachment 4 hereto is a copy of that transmittal letter. The study itself is already contained in your files.

As part of this renewal application, the following data is included for the Gary Work's twenty-four (24) outfalls and one (1) deepwell:

1. NPDES Discharge Permit Application:
  - a. Standard Form C - Section I (one submitted for total discharge)
  - b. Standard Form C - Section II (one pack each per outfall)
  - c. Standard Form C - Section III (where applicable)
2. Schematic Flow Diagram DF1374-26 and individual location and flow configuration diagrams for each outfall.
3. Two checks totaling \$1300 to cover the application filing fee.

We suggest that after you have had an opportunity to review the enclosed application and data submitted herewith that a meeting be arranged between the State of Indiana, USEPA and U. S. Steel to discuss these requested modifications.

Very truly yours,

  
MANAGER, TECHNICAL SERVICES  
Gary Works

06632

EJC/sjc

Attachments (to those receiving copies)

cc: USEPA Region V  
NPDES Permit Section  
230 South Dearborn Street  
Chicago, Illinois 60604

R. J. Cleaton  
Box 561  
Beverly Shores, Indiana 46301

ATTACHMENT 1

— See Separate File  
for USSC Consent  
Decrees

Consent Decree on the consolidated cases  
of United States of America v. United States Steel  
Corporation, Hammond Civil H 77-212, and Stream  
Pollution Control Board for the State of Indiana v.  
United States Steel Corporation, Hammond Civil 73 H 190.

06633

ATTACHMENT 2

Stipulation entered in the consolidated cases of  
Metropolitan Sanitary District of Greater Chicago v.  
United States Steel Corporation, No. 70 CH 964,  
and People of the State of Illinois, ex rel. William  
J. Scott v. United States Steel Corporation, No. 72 CH 258.

06634



IN THE CIRCUIT COURT OF COOK COUNTY, ILLINOIS  
COUNTY DEPARTMENT, CHANCERY DIVISION

THE METROPOLITAN SANITARY DISTRICT )  
OF GREATER CHICAGO, a Municipal )  
corporation, )

Consolidated Cases

Plaintiff, )

v. )

No. 70 CH 964

UNITED STATES STEEL CORPORATION, )

Defendant. )

-----  
PEOPLE OF THE STATE OF ILLINOIS )  
Ex rel. WILLIAM J. SCOTT, Attorney )  
General of the State of Illinois, )

Plaintiff, )

v. )

No. 72 CH 258

UNITED STATES STEEL CORPORATION, )

Defendant. )

STIPULATION

Now come the parties hereto, Plaintiff The Metropolitan Sanitary District of Greater Chicago, by Allen S. Lavin, its attorney, and Plaintiff The People of the State of Illinois, by William J. Scott, their attorney, and Defendant United States Steel Corporation, by Rooks, Pitts, Fullagar and Poust, and without trial upon the merits state as follows:

PART I

1. In 1970, Plaintiff, The Metropolitan Sanitary District of Greater Chicago (hereinafter "Sanitary District") by its attorney Allen S. Lavin filed a Petition for Injunctive Relief in the Circuit Court of Cook County, Illinois, No. 70 CH 964, against United States Steel Corporation (hereinafter USSC) and American-Maize Company seeking an injunction against the

06635

pollution of the Illinois water of Lake Michigan.

2. In 1972, the People of the State of Illinois (hereinafter referred to as "State of Illinois") by William J. Scott, its Attorney General, filed a Petition for Injunctive Relief in the Circuit Court of Cook County, Illinois, No. 72 CH 258, against USSC seeking an injunction against the pollution of the Illinois waters of Lake Michigan.

3. Defendant USSC owns and operates an integrated steel manufacturing facility in Lake County, Indiana, more commonly known as Gary Works. In the course of its operations it necessarily uses large quantities of water. It has filed answers to both said Petitions for Injunctive Relief denying the material allegations thereof and further denying the jurisdiction of the Court, and asserting that Plaintiffs' complaint is insufficient in law and equity.

4. In Metropolitan Sanitary District of Greater Chicago v. United States Steel Corp., 30 Ill. App. 3d 360, 332 N.E.2d 426 (1975) and People of the State of Illinois ex rel. William J. Scott v. United States Steel Corp., 40 Ill. App. 3d 607, 352 N.E.2d 225 (1st Dist. 1976), the Illinois Appellate Court upheld the trial courts' denial of Defendant USSC's motion to stay the action.

06636

5. By order of the Court these two actions were consolidated for trial and the Sanitary District case against American-Maize was severed.

6. During the pendency of this litigation, the parties have engaged in discovery and in an exchange of technical information regarding the available technology for control and elimination of steel mill wastewater discharges. Each party believes that the public interest will best be served by



resolution of this controversy under the terms and conditions herein stated provided it settles all claims Plaintiffs have against Defendant.

ON THE BASIS OF THE ABOVE STATEMENTS, IT IS HEREBY STIPULATED AND AGREED between the Metropolitan Sanitary District of Greater Chicago, the State of Illinois and United States Steel Corporation, by their respective attorneys, as follows:

1. Subject to the terms and conditions set forth herein, USSC has agreed to undertake to construct and operate certain wastewater treatment control facilities at its Gary Works by the following dates and in the following manner:

A. BLAST FURNACE RECYCLE SYSTEM. USSC shall recycle all process water discharges from the blast furnaces by October 1, 1979.

B. BLAST FURNACE RECYCLE BLOWDOWN SYSTEM. USSC shall install an advanced treatment for the blowdown from the blast furnaces. Such treatment shall consist of filtration, chlorination and carbon adsorption and it shall be in operation by August 1, 1980.

C. COKE PLANT PROGRAM. By August 1, 1980, USSC shall eliminate the discharge of all process water from the Gary Works Coke Plant to any public waters or recycle such process waters and filter the blowdown or treat such process waters with physical filtration, alkaline chlorination, and carbon adsorption filtration or with systems of equivalent performance.

06637

D. BAR AND STRUCTURAL MILLS; ELECTROLYTIC TINNING; TIN MILL CHROME CONTROL. By April 1, 1979 USSC shall provide and operate all necessary equipment: (1) to eliminate pickle liquor discharges at the Bar and Structural

Mills; (2) to implement a closed handling and recovery system for phenol and tin in the Electrolytic tinning lines; and (3) to convert hexavalent chrome into tri-valent chrome prior to treatment in the terminal treatment plant.

E. 80 and 84 INCH HOT STRIP MILLS. By June 1, 1982, USSC shall install a system to recycle all process water from the 80 inch and 84 inch hot strip mills. Blowdown from this recycle system shall be treated by filters and the blowdown shall be discharged to outfall ST-17 on the Grand Calumet River. At the completion of this recycle facility all process water discharges directly to Lake Michigan will be eliminated.

F. CONTINUOUS CASTER. By June 1, 1982, USSC shall install a system to recycle the process water from the slab cooling at the continuous caster. The remaining process water from the continuous caster shall be diverted to the terminal treatment lagoons to serve as makeup water to the terminal treatment lagoon recycle system described in paragraph 1-I below.

G. U.S.S. TUBING SPECIALTIES PLANT (previously known as Tube Works). By February 1, 1983 USSC shall install a system to recycle all process water from the U.S.S. Tubing Specialties Plant including the seamless tube mills and filter the blowdown prior to discharge to the Grand Calumet River.

H. TERMINAL TREATMENT PLANT. By April 1, 1985, USSC shall install filtration facilities for all process water discharged from the Terminal Treatment Plant.

06638



I. BAR AND STRUCTURAL MILLS. By August 31, 1985, USSC shall install a recycle system to recycle all process water from the Bar and Structural Mills. These mills presently discharge to the terminal lagoons at outfalls GW-10A and GW-11A. All blowdown from this recycle system shall be filtered prior to discharge.

2. At the conclusion of the above described program, all process water discharged from Gary Works will be filtered prior to discharge and all process water presently discharged to waterways other than that from the terminal treatment plant (which shall be filtered) shall be recycled.

### 3. DEFINITIONS.

A. "Process water" is defined as water used in a process which, in the course of operation, picks up chemical, liquid or solid contaminants through contact with production materials or materials created as incidents of production.

B. "Recycle system" and "recycle" is defined as the reuse of waters. Rather than the once-through discharge of water, a recycle system reuses the water. As the water is recycled, a build-up of dissolved solids occurs which, if not diminished, will hamper or prevent the operation of both production and waste control facilities. To avoid such build-up, relatively small amounts of process water known as "blowdown," normally comprising no more than 10 percent of the wastewater volume of a "once-through" system, must be discharged from the system and replaced by service water.

C. "Non-contact cooling water" is defined as service

06639

water other than process water which does not in the course of normal operations come into contact with the product or products of production and which is discharged without further treatment.

D. "Average concentration." The "average concentration" shall be based on the arithmetic average of the consecutive composite samples taken during a calendar month after each point of final process water treatment and prior to admixture with non-contact cooling waters or other process waters. Such composite samples shall be taken pursuant to the procedures established herein.

E. "Maximum concentration." The "maximum concentration" shall be based on a 24-hour composite sample taken after each point of final process water treatment and prior to admixture with non-contact cooling waters or other process waters.

4. CONCENTRATION LIMITATIONS. The filtration facilities installed pursuant to this Stipulation shall achieve the following limitations:

A. An "Average Concentration" limit of 10 mg/l suspended solids.

B. A "Maximum Concentration" limit of 25 mg/l suspended solids and 10 mg/l oil and grease.

5. FLOW LIMITATIONS. The recycle systems installed pursuant to this Stipulation shall achieve a blowdown not to exceed 10 percent of the water volume in circulation in such systems.

6. ADJUSTMENTS. The recycle systems and filtration

06640



facilities referred to in this Stipulation will be designed and constructed to achieve the agreed upon blowdown rates and concentration limits. If after a reasonable period for start-up USSC, in the exercise of its engineering judgment, finds that the blowdown rate of any recycle system is inadequate to prevent technical problems which threaten to render production facilities or other equipment inoperative in the ordinary course of operation or, because of technical problems, it is unable to operate any filtration facilities to achieve the agreed upon concentration limits in Paragraph 4, and that engineering or other techniques being utilized by steel companies in the Metropolitan Chicago Area with similar recycling and filtration system, operating under similar conditions are inadequate to solve these technical problems, it may request agreement of the Plaintiffs to an increase in the applicable discharge flow rate and/or concentration limit(s). Any request for an increase in the flow rates or concentration limits shall be acted upon by Plaintiffs within 30 days. If Plaintiffs agree to a request for an increase, such agreement shall be presented to the Court for its review and approval. If the Plaintiffs refuse to agree to a request for an increase, USSC may request an increase in the applicable discharge flow rate and/or concentration limits from the Court.

7. PROGRAM MODIFICATION. USSC may, as part of its program of compliance with this Stipulation, modify the wastewater treatment control facilities specifically provided for in this Stipulation if such modified control facilities achieve, by the dates specified, pounds of loads and effluent concentration limits in the discharge of pollutants at least as low as those which would have been achieved by implementation of the control facilities specified above. In the event of any



substantial modification, USSC shall notify the Plaintiffs in advance.

8. SAMPLING, REPORTS AND INSPECTIONS. Upon completion of the construction program, USSC will take 24 hour composite samples of the discharges from the filtration facilities referred to herein above on all normal working days Monday through Friday and longer composite samples over weekends and holidays. These samples shall be analyzed for suspended solids and oil and grease and the results of such analysis shall be made available to the Plaintiffs and retained by USSC for three years. During the period of carrying out the completion of the construction program described herein, USSC will furnish Plaintiffs with monthly reports of its effluent data furnished by it to the State of Indiana and notify Plaintiffs when construction begins, when a treatment facility is placed in operation and give reports of the progress of construction. The Plaintiffs will be allowed access to Gary Works for purposes of the inspection of facilities and sampling records and for sampling, all at reasonable times, with reasonable frequency, and on reasonable notice.

9. FORCE MAJEURE. Should USSC be obstructed or delayed in the commencement, prosecution or completion of the work herein above referred to, or should USSC be prevented from complying with any of the terms of this Stipulation, by any act or delay of the State of Illinois or the Metropolitan Sanitary District, or by inability, with the exercise of due diligence, to obtain necessary railroad and transportation facilities, or by unavoidable acts or delays on the part of transportation companies in transporting, switching or delivering material for said work, or by any act or delay of agencies of the federal, state or local authorities, or by acts of public authorities,

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or by riot, insurrection, war, pestilence, fire, lightning, earthquake, tornado, flood, work slowdown, work stoppage, lock-out or strike, or by equipment breakdown, or through any delays or defaults of other parties under contract with USSC or due to unavoidable delays in obtaining the specified materials or equipment for said work, or by any delays herein before specified which result in performing work under abnormal weather conditions beyond such as usually occur during the times specified herein, or due to other causes beyond the control of USSC, then compliance with said terms of the Stipulation or the time fixed for the completion of said work shall be extended or suspended for a period equivalent to the time lost by reason of any of the aforesaid causes, and said delay or failure to comply shall not be in violation of this Stipulation.

10. TERMINATION OF OPERATIONS. If USSC's operation of any facility at Gary Works shall terminate as a result of the application of a federal, state or local law or regulation, or as a result of an administrative order, or any order or decree of the Court, or for any other reason, all obligations of USSC hereunder with respect to that facility shall cease. In the event USSC's operation of that facility at Gary Works is thereafter resumed, USSC's obligations with respect to such facility shall be reinstated commencing on the date USSC's operations resume with the time period for compliance extended by a period of time equal to the period of time the facility was not in operation.

11. CHANGE IN CIRCUMSTANCES. If in the opinion of USSC the foregoing program shall become unlawful or unreasonable because of a change in circumstances, and USSC wishes to modify or cease its obligations hereunder, USSC shall make application to the Court. If the Court determines that the program is

unlawful or places an unreasonable burden on USSC, USSC's obligations may be terminated or modified as the Court may decide. If, however, the Court does not make such determination within thirty (30) days from the date of the last filing of any material regarding the application by the parties, USSC's obligations shall be suspended pending determination by the Court. The parties will make all filings with respect to any applications by USSC within 30 days from the date of the application, unless extended by the Court.

12. COOPERATION. As long as USSC is not in material default herein the Metropolitan Sanitary District and the State of Illinois agree to support any application by USSC to any agency of the federal, state and municipal governments for a permit or permits which may be required for the construction or operation of the wastewater treatment facilities contemplated herein.

13. CONFIDENTIALITY. Should USSC believe that any reports, records, or information (other than effluent data) to be submitted to Plaintiffs pursuant to this Stipulation is or should be treated as confidential, or constitutes trade secrets, or would otherwise adversely affect Defendant's interests if divulged, then Defendant USSC may, prior to submitting such information, request that Plaintiffs treat such information as confidential and not disclose it to third parties. Should Plaintiffs fail or refuse to agree in writing that such information will be treated in confidence prior to receipt of such information, USSC may petition the Court for an order finding that such information is confidential and it shall not be divulged to third parties.

14. RESERVATION OF RIGHTS. Nothing contained in this

06644



Stipulation or in any other document filed with the Court herein, or stated in any meeting or hearing attended by representatives of the Plaintiffs and Defendant shall be deemed in any way whatsoever a waiver by Defendant of its legal or factual positions taken in this proceeding including but not limited to its objections to the jurisdiction of the Court, its denial of Plaintiffs' rights and authority to maintain this action, or a waiver of any rights under the Constitution or laws of the United States of America, State of Indiana, or State of Illinois. Nothing contained in this Stipulation or in any other document filed with the Court herein or stated in any meeting or hearing attended by representatives of the Plaintiffs and Defendant shall be deemed in any way whatsoever a waiver by Plaintiffs of their legal or factual positions taken herein. Furthermore, nothing in this Stipulation shall relieve USSC from complying with all applicable federal, state and local laws and regulations, provided, however, that this provision shall not be in derogation of the rights and obligations created herein. Defendant USSC's obligations hereunder are expressly conditioned upon all other terms and conditions of this Stipulation.

15. PAYMENT OF COSTS. At the time an order is entered approving this Stipulation, USSC shall pay to Plaintiffs a sum of Five Hundred Thousand Dollars (\$500,000.00) as follows:

A. A sum of Two Hundred Fifty Thousand Dollars (\$250,000.00) to be paid as directed in writing by Attorney General William J. Scott as liquidated reimbursement for litigation expenses incurred in preparing this case to the date of this Stipulation.

B. A sum of Two Hundred Fifty Thousand Dollars

(\$250,000.00) to be paid as directed in writing by The Metropolitan Sanitary District of Greater Chicago as liquidated reimbursement to the Sanitary District for litigation expenses incurred in preparing this case to the date of this Stipulation.

16. DISMISSAL. Upon the signing of this Stipulation and the filing thereof with the Court, and upon the Court's approval, an order shall be entered dismissing the Plaintiffs' Petitions and all pending proceedings herein. In the event of material default in carrying out any obligations hereunder, the Plaintiffs shall have the right to reinstate their actions to seek to enforce this Stipulation, subject to the reservations contained herein.

DATED:

AUG 10 1977

THE METROPOLITAN SANITARY DISTRICT  
OF GREATER CHICAGO

By

Allen S. Lavin  
Allen S. Lavin, Vts Attorney

PEOPLE OF THE STATE OF ILLINOIS  
ex rel. WILLIAM J. SCOTT, ATTORNEY GENERAL

By

William J. Scott  
William J. Scott, Attorney General

UNITED STATES STEEL CORPORATION

By

James H. Harrington  
Rooks, Pitts, Fullagar & Poust,  
Its Attorneys

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ATTACHMENT 3

United States Steel Corporation, Gary Works

letter, dated December 20, 1977 to Mr. Joseph

H. Snyder, Section Chief, Compliance Section,

Indiana Stream Pollution Control Board.

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E. Clancy.



WALTER E. JACKSON  
ASSOCIATE DIRECTOR  
ENVIRONMENTAL CONTROL—WEST

600 GRANT STREET  
PITTSBURGH, PENNSYLVANIA 15230

December 20, 1977

Mr. Joseph Snyder  
Section Chief  
Compliance Section  
Indiana Stream Pollution Control Board  
1330 West Michigan Street  
Indianapolis, Indiana 46206

Gary Works NPDES Program

Dear Mr. Snyder:

In my letter of September 29, 1977 I outlined the status of our NPDES program. This report will serve as an update and summary of current activity based on letters sent by Gary Works since my previous correspondence.

Since September 29 there have been six occurrences where zinc concentrations in outfall ST-17 exceeded the permit value of 0.30 milligrams per liter. We have not been able to determine the exact cause of these episodes, even though intensive investigations are continuing. As we indicated previously, start-up problems associated with the No. 1 electro-galvanizing line were believed related to initial excursions. However, these problems were resolved and we now have no single source that appears to be responsible. Numerous flows discharge into the terminal treatment plant that could contain trace concentrations of zinc. These include cooling tower blowdown water and oily wastes from the tin mill operations. These flows are being monitored, but to date they are found to be low in zinc concentration. We believe that the control procedures and treatment process are adequate for zinc removal, but the limits in our permit are too low based on the solubility of zinc. The attached report, Exhibit I, reviews the technical data for zinc and supports an effluent standard of 1.0 mg/l 30-day average and 2.0 mg/l daily average. We are requesting that you consider a modification of our permit limits to include these more realistic values.

There have been four occurrences of chromium excursions above the 0.30 mg/l standard for ST-17 since September 29. One of these occurrences was not able to be explained after an intensive investigative effort. The other three occurrences were the result of inadvertent

06648



Mr. Joseph Snyder  
Page 2  
December 20, 1977



leaks or overflows at our tin free steel line, where chromic acid is used in the electro-plating process. Chrome removal at the terminal treatment plant was not sufficient to achieve the standard on these occasions. One occurrence involved an overflow at the chromic acid operating tank (10-27-77); another occurrence resulted from a gasket leak in the acid recirculating system (11-28-77); and the third occurrence was the result of a pipe leak in the chromic acid system (11-11-77). In each instance where a leak was determined, the process was shut down until repairs were completed. Meetings have been held with operating personnel and surveillance has been increased to minimize future occurrences. To avoid inadvertent overflows, we are investigating level warning devices for operating tanks. With a combination of these efforts and our continued diligence, we believe future excursions above the present standard can be minimized.

For outfall GW-5, there have been only two ammonia excursions above permit levels since September 29. There has been a general reduction in ammonia discharges since the unexplained high values earlier in the year. We cannot single out the reasons, either for the unusually high values, or for the recent decrease. However, we believe the increased discharges associated with bringing blast furnaces on line may have been a factor early in the year. Also, we have continued with our program at No. 13 furnace to avoid cross-connections and other waste water discharges that may have impacted the GW-5 effluent. Our surveillance at the blast furnaces will continue in an effort to maintain compliance with permit conditions.

Your response to our proposed zinc limits is anticipated. Please don't hesitate to contact me if there are any questions.

Very truly yours,

A handwritten signature in dark ink, appearing to read "W. E. Jackson".

Walter E. Jackson  
Associate Director  
Environmental Control-West

WEJ:mjh

cc: B. G. Constantelos

bc: G. J. Behrens  
J. H. Dickerson  
J. O. Hawthorne  
J. P. Gravenstreter  
W. Foster  
J. T. Harrington  
V. V. Nordlund

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Zinc Limits at Gary Works ST-17 Outfall

The NPDES permit for Gary Works Outfall 034 (ST-17) specifies a daily average zinc limit of 0.1 mg/l and a daily maximum of 0.3 mg/l. Heavy metals such as zinc are removed at the ST-17 terminal-treatment plant by pH adjustment with lime, followed by clarification to remove the insoluble metal hydroxides.

The literature on zinc solubility as a function of pH has been reviewed and the data from three sources are given below:

Reference	Zinc Solubility, mg/l		
	Minimum Solubility (pH)	at pH 9.0	at pH 8.0
Weiner <sup>1)</sup>	0.18(10.2)	0.7	8
Feitknecht and Schindler <sup>2)</sup>	0.15( 9.4)	0.18	16
(Draft document) <sup>3)</sup>	0.09( 9.2)	0.12	10

Although there appears to be general agreement that the solubility limit for zinc is in the range of about 0.1 to 0.2 mg/l, the pH at which the minimum is reported is, in all three cases, above the 9.0 pH value, which is the upper limit for Outfall ST-17 (the permit range for pH is 6.0 to 9.0). At pH values lower than 9.0, the zinc solubility increases rapidly as indicated in the above table for a pH of 8.0. The normal variation in pH control at the terminal-treatment plant precludes the operation at exactly a pH of 9.0. The plant must operate at pH values of 9.0 or below, and this is the region where the solubility of zinc is increasing rapidly.

The suspended solids limits for ST-17 are 30 mg/l daily average, and 60 mg/l daily maximum. Since some insoluble zinc either as zinc metal or zinc hydroxide would be expected to be entrained in the suspended solids, a total zinc limit based on solubility parameters only is not considered to be realistic.

All of the above factors indicate that, within the pH and suspended solid constraints of the NPDES permit, the daily average zinc limit of 0.1 mg/l cannot be consistently maintained at the terminal-treatment plant.

Recently, the Illinois Institute for Environmental Quality located at the Illinois Institute of Technology surveyed<sup>4)</sup> the technology for removing various heavy metals from wastewater based on the performance of industrial treatment processes. This information was used by the Illinois Effluent Standards Advisory



Group, a panel of four nationally prominent wastewater-treatment authorities, to make recommendations<sup>5)</sup> for effluent standards for the State of Illinois. It was the Advisory Group's recommendation that the 30-day average limit for zinc should be 1.0 mg/l and that the daily average should be 2.0 mg/l. These limits are consistent with U. S. Steel monitoring data for zinc at Outfall ST-17 since July 1.

#### References

1. R. Weiner, "Die Abwasser der Galvanotechnik und Metallindustrie," 4th edition, Eugen G. Leuze Verlag, 1973 (cited in EPA Technology Transfer Seminar Publication, "Waste-Treatment, Upgrading Metal-Finishing Facilities to Reduce Pollution," EPA 625/3-73-002, July 1973).
2. W. Feitknecht and P. Schindler, Pure and Applied Chemistry, Vol. 6, 1963, pp 130-99.
3. EPA Draft Supplement for Pretreatment to the Development Documents for the Inorganic Chemicals Manufacturing Point Source Category (EPA 440/1-77/087), page VII-7, February 1977.
4. J. W. Patterson, "Technology and Economics of Industrial Pollution Abatement," Illinois Institute for Environmental Quality, No. 76/22, 1976.
5. Illinois Pollution Control Board, Public Hearing on Amendments to the Water Pollution Regulations, No. R76-21, Chicago, Illinois, March 10, 1977.

12/7/77

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Grant, a panel of four members of the  
 authorities, to make recommendations  
 for the State of Illinois. The panel  
 found that the 30-day period for the  
 and that the daily work should be  
 consistent with the 30-day period.  
 State alone only.

# REFERENCES

1. E. W. Palmer, "The Illinois Water Pollution Control Act," *Illinois State Journal*, Vol. 6, 1961, pp. 1-10.
2. E. W. Palmer, "The Illinois Water Pollution Control Act," *Illinois State Journal*, Vol. 6, 1961, pp. 1-10.
3. E. W. Palmer, "The Illinois Water Pollution Control Act," *Illinois State Journal*, Vol. 6, 1961, pp. 1-10.
4. E. W. Palmer, "The Illinois Water Pollution Control Act," *Illinois State Journal*, Vol. 6, 1961, pp. 1-10.
5. Illinois Pollution Control Board, "Report on the Water Pollution Control Act," Illinois, March 1961.



ATTACHMENT 4

United States Steel Corporation letter, dated January 6, 1978,  
to Mr. Oral H. Hert, Technical Secretary, State of  
Indiana, Stream Pollution Control Board and  
Mr. B. J. Constantelos, Chief, Compliance and Engineering  
Section, U.S. Environmental Protection Agency, Region V.

06652

5/15/19



WALTER E. JACKSON  
ASSOCIATE DIRECTOR  
ENVIRONMENTAL CONTROL—WEST



*United  
States  
Steel  
Corporation*

600 GRANT STREET  
PITTSBURGH, PENNSYLVANIA 15220

January 6, 1978

Mr. Oral H. Hert  
Technical Secretary  
State of Indiana  
Stream Pollution Control Board  
1330 West Michigan Street  
Indianapolis, Indiana 46206

Gary Works NPDES  
Thermal Discharge Demonstration

Dear Mr. Hert:

In accordance with our NPDES requirements, USSC hereby submits the enclosed report entitled, "U. S. Steel Corporation Gary Works Thermal Discharge Study", December, 1977.

The study concludes that present thermal discharges to Lake Michigan, Gary Harbor, and the Grand Calumet River "should have no major biological influence on the southern Lake Michigan area." However, in certain instances these discharges exceed present temperature limits. The study demonstrates that requirements of regulations SPC 4-R and SPC 7R-2 are more stringent than necessary and modified limits are requested by USSC.

For outfalls discharging to Lake Michigan/Gary Harbor, thermal limitations based on Btu loadings should be considered. If Btu loadings are not feasible, a revision to the mixing zone definition should be considered along with an exemption for periods when ambient lake temperatures are at or near regulation limits.

For the Grand Calumet River, alternate temperature limits applicable at the PRR bridge are requested. The suggested limits are listed on p. 1-4 of the Thermal Study. These limits were also suggested in my letter to you of August 18, 1977.

Please let me know if you feel a meeting would be desirable to discuss this study.

Very truly yours,

06653

*W. E. Jackson*

TECHNICAL SERVICES

JAN 12 1978

GARY WORKS

WEJ:mjh

Attachment

cc: B. G. Constantelos  
Chief, Compliance and Engineering Section

United States Steel Corporation

600 Grand Street  
Pittsburgh, Pennsylvania 15222

January 4, 1978

WALTER E. JACKSON  
ASSISTANT SECRETARY  
ENVIRONMENTAL CONTROL ADMINISTRATION

Mr. Carl H. Hertz  
Technical Secretary  
State of Indiana  
Indiana Pollution Control Board  
1333 West Michigan Street  
Indianapolis, Indiana 46204

GARY WORKS UNIT  
Thermal Discharge Limitation

Dear Mr. Hertz:

In accordance with our letter requirements, USMC hereby submits the enclosed report entitled, "U. S. Steel Corporation Gary Works Thermal Discharge Study", December, 1977.

The study quantifies the present thermal discharges to Lake Michigan, Gary Harbor, and the Grand Calumet River. Should have no major hydrological influence on the northern Lake Michigan area. However, in certain instances these discharges exceed present temperature limits. The study demonstrates that requirements of regulations 310-4-K and 310-4-L are more stringent than necessary and modified limits are requested by USMC.

The analysis demonstrated to Lake Michigan, Gary Harbor, thermal limitations based on our findings should be considered. It has findings are not feasible, a revision to the existing regulations should be considered along with the existing 310-4-K and 310-4-L regulations. These are at or near regulation limits.

The study also demonstrated that the temperature limits are not feasible at the 310-4-K and 310-4-L limits. The suggested limits are listed on p. 14 of the Thermal Study. These limits were also suggested in my letter to you of August 19, 1977.

Please let me know if you feel a meeting would be desirable to discuss this study.

Very truly yours,

*W. E. Jackson*

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INDUSTRIAL DIVISION

TELETYPE

TELEPHONE

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